

Some people ask about Break Even “BE” when considering solar. BE is sometimes used by a businesses to choose between multiple projects/opportunities to invest their cash for additional profits. Other indicators are Internal Rate of Return “IRR” and Net Present Value “NPV”. Of the three I have found IRR to be a better indicator. To produce these indicators its not as simple as dividing A by B, it requires a complex tool like the Solar Financial Modeling Tool created by NC State University with funding provided by U.S. Department of Energy and U.S. Economic Development Administration for the Solar Instructor Network with state incentive feed from DSIRE.

The modeling tool calculates; Break Even, IRR (Internal Rate of Return), NPV – Net Present Value and charts for 25 years monetization of cash flows, NPV cashflows, Cumulative cashflows, and comparison of net meter vs buy all – sell all NPV cash flow. And provides tables for up to 25 years of for seven additional cashflows and values.

The modeling tool uses variables for PV or solar thermal; residential, commercial, non-tax paying entity; cost, scheduled replacement, replacement cost, operations and maintenance cost, metering cost, and insurance cost; Federal tax rate, tax credit, credit years, and bonus depreciation; State tax credit, credit term, and credit maximum; Financial Discount Rate, loan interest rate, loan percentage of cost, and length of loan; Price of electricity, annual electric bill, energy escalation rate, avoided wholesale cost, REC price buy sell all and contract period, REC price net-meter and contract period; Installation size, production, warranty period with degradation or power output; interconnection – net meter or buy-sell-all; Degradation method – annual or power output.

I learned this tool several years ago during solar instructor classes at NCSU. It takes considerable time to get familiar using. I think I could install a PV system in less time. This tool makes sense for a business and is useful in many surrounding states that have multiple complex incentives, tax rebates, SREC and policies but in Virginia we have almost nothing so we never look as good as any other state. It’s useless in VA for residential if you finance just like a car or house, you won’t hear of BE for a car or house.

Definitions:

BE: Break even in economics & business, specifically cost accounting, the break-even point (BEP) is the point at which cost or expenses and revenue are equal: there is no net loss or gain, and one has "broken even."

IRR: Calculations are commonly used to evaluate the desirability of investments or projects. The higher a project's IRR, the more desirable it is to undertake the project. Assuming all projects require the same amount of up-front investment, the project with the highest IRR would be considered the best and undertaken first.

NPV: In the case when all future cash flows are incoming and the only outflow of cash is the purchase price, the NPV is simply the PV of future cash flows minus the purchase price

It's been my experience that people who want to know about the BE for solar never purchase solar. Although the energy escalation rate now estimated at 3% annually could change suddenly. I know of one area that has been told their electric rates will increase by 31% over the next four years which is closer to 8% not 3%. I would expect to see 5% which has been the average over a longer period of time.